The Examiner has now finally rejected the claims on the basis of three newly cited references: U.S. Patent 5,171,985, Kawaguchi; U.S. Patent 5,100,479, Wise et al; and U.S. Patent 5,023,447, Masuko et al. For the reasons discussed hereinabove, the applicants believe that such a final rejection was improper. The applicants therefore respectfully request that the Examiner reconsider his final rejection and withdraw it in favor of a non-final rejection.

Claims 1 and 31 are objected to because of certain informalities. In particular, claim 1 recites "assemblies" rather than "subassemblies". Claim 1 has therefore been amended to overcome this objection. In addition, upon closer review, the applicants have recognized other claims with the same problem and have therefore amended claims 30, 31, 48 and 95.

In respect to claim 31 the Examiner has said that it recites "said at least one solderable surfaces" and therefore lacks proper antecedent. The applicants respectively disagree. Original claim 31, which was never amended until now, is set forth in its entirety in Attachment C. As the Examiner will observe, it does not recite "said at least one solderable surfaces". However, in the applicants search through the claims for the particular error as pointed out by the Examiner, it was found that claims 38 and 44 are in error in this regard. Accordingly, those claims have been amended to correct that problem.

Claims 26-31 are rejected under 35 U.S.C. 112 second paragraph as being indefinite in respect to the recitation of "pin o hole", and with respect to a lack of antecedent for "said pin and said hole". Claim 26 has accordingly been amended to overcome this rejection.

Referring now to the rejections of the claims on the basis of newly cited prior art, claims 1 and 82 are rejected under 35 U.S.C. 102(b) as being anticipated by Masuko et al. (U.S. Patent 5,023,447). Claims 1, 2, 7, 8, 80 and 82 are rejected under 35 U.S.C. 102(b) as being anticipated by Wise et al. (U.S. Patent 5,100,479). Claims 26-29 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawaguchi (U.S. Patent 5,171,985). Claims 69, 61-64, 66, 68-71 and 89-92 are rejected under 35 U.S.C. 102(b) as being anticipated by Kanaya et al. (U.S. Patent 5,155,401). Claims 13, 15, 18, 23, 24, 32, 33, 35, 37, 46, 47, 49, 52, 53, 55, 57, 83, 86-88, 95, 96, 98, 101-103, 105 and 106. Claims 73, 74, 76-78, 93 and 94 are

rejected under 35 U.S.C. 102(e) as being anticipated by Christensen (U.S. Patent 5,753,908). Claims 14, 16 17, 19-22, 25, 34, 36, 48, 50, 51, 54, 56, 58, 84, 85, 97, 99, 100, 104, 107 and 108 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kropp. Claims 60, 65, 67 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanaya et al. Claims 75 and 79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christensen. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawaguchi. Claims 3-6 and 45 were rejected under 35 U.S.C. 103(a) as being unpatentable over Wise et al. Claims 9-12 and 81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wise et al., in view of Kawaguchi.

The applicants have reviewed the cited references and believe that the claims are patentable distinctive thereover for the reasons to be discussed hereinafter.

The Masuko reference describes a photo-semiconductor module having a casing 30 to which a ceramic substrate 31 is soldered. In separate operations, a support arm 35 having a semi-spherical lens 36 attached thereto is soldered to the substrate 31, and then a photo diode chip 33 is also soldered to the ceramic substrate 31. This is accomplished with no requirement for accurately positioning the photo diode chip 33 with respect to the semi-spherical lens 36. The lens 36 is merely mounted above the photo diode chip 33 and at an angle of 45° relative thereto. It is then the next step in which the alignment is critical. That is, an optical fiber 41 is secured to the side wall of the casing 30, and "then the PD chip 33 accommodated in the casing 30 and the optical fiber 41 are optically coupled to each other" (column 5, lines 8-10).

This is substantially different from the applicants invention wherein the relative placements of the optical subassembly and the image sensor subassembly are the critical issue. Referring to claim 1, the preamble recites a method for mounting an optical subassembly to an image sensor subassembly. In the Masuko et al., reference, this does not occur. Rather, both the support arm 35 with its semi-spherical lens 36, and the photo diode chip 33 are secured to a ceramic substrate rather then their being interconnected together as recited in claim 1. A further recitation in claim 1 recites the step of "soldering said optical and image sensor subassemblies together using a solder material. Again, in the Masuko reference,

those elements are not soldered together but are rather each soldered to a ceramic substrate. Thus, not only does Masuko et al., not have the structural limitations as set forth in claim 1, but neither does it have the need to do so since the co-alignment of these two elements is not critical for the reasons discussed hereinabove.

The Examiner has rejected claim 82 under 35 U.S.C. 102(b) as being anticipated by Masuko et al. However, the applicants believe that the Examiner is mistaken since claim 82 is an apparatus claim which is dependent on claim 79. For the benefit of the Examiner claim 82 is shown in Attachment D hereof. The Examiner is therefore requested to correct or clarify his position in this regard.

The Wise et al., reference shows an infrared detector 10 mounted inside a casing 12. Output leads 14 are connected to output pads 26 of the detector 10 at bonding regions 16 using a solder material. The output leads 14 typically connect the detector to processing circuitry. A window 13 in the casing 12 allows infrared radiation to strike the thermopiles 24 through a dielectric membrane 40 formed in aperture 22. In his explanation, the Examiner refers to the casing 12 as "an optical subassembly". Although the casing 12 has an opening or window 13 through which the infrared radiation is permitted to pass, it can not reasonably be considered "an optical subassembly" of the type intended by the applicant. That is, in the present case, the optical subassembly comprises a framework which holds a lens for focusing the light passing therethrough. The purpose and the structure of the present invention as recited in claim 1 is that of aligning the lens of the optical subassembly such that it coincides with the image sensor when the two subassemblies are interconnected.

Considering the recitation of claim 1 as discussed hereinabove regarding the step of soldering the optical and image sensor subassemblies together, in order for the Wise et al., reference to anticipate the invention as recited in claim 1, it would be necessary for the optical subassembly to not only include the casing 12 but also the leads 14, and for the image sensor assembly to also include the output pads 26, such that the optical subassembly is soldered to the image sensor assembly. The applicants believe that is an unreasonably broad and inaccurate interpretation of the teachings of the Wise et al., reference.

The positioning of the casing 12 in respect to the detector 10 is not critical as in the case of the present invention. Although the window 13 needs to be placed over the detector 10 such that the infrared radiation may pass through the casing 12, its exact positioning is not critical. In this regard, it should be noted that the aperture 22, which functions as the window through which the infrared radiation is detected, is probably more critical, and therefore the particular placement of the rim 20 with respect to the thermopiles 24 is the relative positioning that is more closely controlled in accordance with the process as set forth in the Wise et al., reference.

In respect to the step of the soldering the output pads 26 to the pins 14, there is no mention of a step of aligning the respective elements nor the need to do so. Thus, one skilled in the art would simply understand that reference to teach that the soldering process was simply a way to electrically interconnect the leads 14 to the output pads 26, rather then as a method of interconnecting two elements that are being closely co-aligned.

For the reasons discussed hereinabove the applicants believe that the Wise et al., reference neither shows nor suggests the method as set forth in claim 1. The claims that are dependent on claim 1 recite further steps that would further distinguish over the Wise et al., reference.

In respect to the rejection of claims 80 and 81 in view of the Wise et al., reference, the applicants are confused inasmuch as those claims are dependent on claim 79 which is an apparatus claim. Again, the applicants request that the Examiner correct or clarify his position in this regard.

The Kawaguchi reference shows a C shaped resin molding 9 mounted on a base 12, with the molding 9 having mounted therein a plurality of leads 5-1 through 5-4. Attached to the lead 5-1 is a light emitting element 1, and attached to the lead 5-2 is a light receiving element 2, with the tube being mounted such that the light emitting element 1 is aligned with the light receiving element 2. The resin molding 9 is mounted on the base 12, and the distal end of the leads 5-1 to 5-4 are connected to the base 12. In one embodiment shown in Fig. 6, the leads 5-1 through 5-4 pass through openings in the base 12 and are soldered into those openings.

Referring to claim 26, the Examiner indicates that the recited substantially rigid member could be either molding 9 or base 12. In respect to the recitation "an

image sensor chip disposed on said substantially rigid member", clearly, there is no image sensor chip disposed on the base 12. Further, the applicants do not agree with the Examiners position that the image sensor chip is disposed on the substantially rigid member 9. Rather, the light receiving device 2 is disposed on the nonrigid member 5-2. If one were to accept the Examiners position, it would be necessary to consider the entire lead structure, from the proximal end to their distal ends, as part of the substantially rigid member. This is not a reasonable interpretation considering the cantilevered condition of both the proximal and distal ends of the leads.

In contrast, the present invention has the image sensor chip securely fastened to a solid image sensor subassembly 14 having a short and rigid pin extending therefrom. The pin can thus be easily precisely positioned with respect to the surrounding hole and soldered in place. The soldering of the leads 5-1-5-4 in the Kawaguchi apparatus, on the other hand, is not critical with respect to its positioning relative to the opening.

The three reference Kanaya et al., Kropp and Christensen have been discussed in applicants previous responses and need no further discussion except to respond to the Examiners further arguments.

In respect to the Examiners remarks concerning claim 46, he says that "when the subassemblies are brought together into alignment or in close proximity (underling added), before soldering there is no contact between the subassemblies as claimed. What the applicants understand from this is that as the subassemblies are brought into close proximity, they are not yet in contact with each other, and this occurs prior to soldering. However, they are not yet in alignment and the alignment does not occur until they are in contact with each other, at which time the soldering does take place.

In respect to claims 59 and 61, the Examiner suggests Kanaya, has a substantially rigid optical subassembly, even though it includes a disk 32, a carrying shaft 19, receiving member 39, a shaft 17, bearings 15 and 16, a rotor 18, a rotor magnet 19 and excitation coils 20 and 21. The applicants believe that inasmuch as these elements are flexibly interconnected such that one part moves with respect to the other, they are not collectively a rigid subassembly.

In view of the discussions above, applicants believe that the claims as amended are patentably distinctive over the cited references. A reconsideration of the Examiners rejection and a passing of the case to issue is therefore respectfully requested.

In the alternative, the applicants request that the amended claims be admitted for purposes of placing the case in better condition for appeal. This is considered proper inasmuch as the claims were amended only to the extent necessary to overcome the Examiners objections on the basis of informalities and rejections on the basis of 35 U.S.C. 112.

If the Examiner believes that contact with Applicant's attorney would be advantageous toward the disposition of this case, the Examiner is herein requested to call Applicant's attorney at the phone number noted below.

The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to Deposit Account No. 50-0289.

Respectfully submitted,

WALL MARJAMA & BILINSKI LLP

By: _____
Dana F. Bigelow
Reg. No. 26,441

DFB/cmh
Telephone: (315) 425-9000

Customer No.: 20874

PATENT TRADEMARK OFFICE